IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s): D. Sinha et al.
Case: 15-41
Serial No.: 09/454,027
Filing Date: December 3, 1999
Group: 2644
Examiner: Andrew R. Graham

Title: Multidescriptive Coding Technique for Multistream Communication of Signals

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SUPPLEMENTAL APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Supplemental Appeal Brief is submitted in response to the Office Action dated June 7, 2004 in the above-referenced application, in which the Examiner reopened prosecution in response to the Appeal Brief filed March 12, 2004.

Applicants have submitted concurrently herewith a response to the Office Action, requesting reinstatement of the appeal.

REAL PARTY IN INTEREST

The present application is assigned to Agere Systems Inc. The assignee Agere Systems Inc. is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals and interferences.

STATUS OF CLAIMS

The present application was filed on December 3, 1999 with claims 1-46. The present application claims priority to a provisional application filed April 29, 1999.

Claims 1-46 are currently pending in the application. Claims 1, 8, 19, 25, 32 and 43 are the independent claims.

Claims 1-46 stand rejected under 35 U.S.C. §103(a). Claims 1-46 are appealed.

STATUS OF AMENDMENTS

There have been no amendments filed subsequent to the rejection.

SUMMARY OF INVENTION

The present invention is directed to arrangements for communicating or recovering a signal that has at least first and second components, utilizing first and second representations of the signal. The first representation contains first information concerning at least the first component, and second information concerning at least one coefficient for predicting the second component based on the first information. The second representation contains third information concerning at least the second component, and fourth information concerning at least one coefficient for predicting the first component based on the third information.

An illustrative embodiment of the invention shown in FIG. 1 of the drawings is in the form of a digital audio broadcast (DAB) system 100 comprising a control station 103, satellites 107a and 107b, and a mobile receiver 105. A transmitter 201 in the control station 103 is shown in FIG. 2, and includes a multidescriptive coder 203. The multidescriptive coder 203 generates the above-noted first and second representations, more specifically referred to in this embodiment as D1 and D2 representations, respectively. The D1 representation contains: (i) information concerning a left channel signal L of an analog stereo audio signal, and (ii) parametric information concerning a right channel signal R of the analog stereo audio signal (such parametric information being denoted "param-R"). The D2 representation in this embodiment contains: (i) information concerning R, and (ii) parametric information concerning L (such parametric information being denoted "param-L"). The D1 and D2 representations are transmitted from the control station 103 to the mobile unit 105

through respective satellite links 112 and 115. See the specification at, for example, page 5, line 13 to page 6, line 25.

Examples of the claimed coefficients are provided in the specification at, among other locations, page 7, line 3, to page 12, line 1. One such example, at page 9, line 15, to page 10, line 6, indicates that the D1 "param-R" parametric information in the case of a two-tap predictor comprises first and second predictor coefficients α^i_0 and α^i_1 of a two-tap predictor for predicting R based on the L information in D1. Similarly, the D2 "param-L" parametric information in the case of a two-tap predictor comprises first and second predictor coefficients β^i_0 and β^i_1 of a two-tap predictor for predicting L based on the R information in D2.

A significant advantage of the claimed arrangements is that they allow multidescriptive representations of a given signal to be transmitted over multiple channels in a bandwidth-efficient manner, such that recovered signal quality is a function of the particular number of multidescriptive representations that are received. See the specification at, for example, page 2, lines 16-23, page 3, lines 9-23, and page 5, lines 4-12.

ISSUES PRESENTED FOR REVIEW

1. Whether claims 1-3, 8, 9, 13, 14, 19-21, 25-27, 32, 33, 37, 38 and 43-45 are unpatentable under 35 U.S.C. §103(a) over U.S. Patent No. 4,498,173 (hereinafter "Reudink") in view of U.S. Patent No. 5,511,093 (hereinafter "Edler").

2. Whether claims 4-7, 15-18, 28-31 and 39-42 are unpatentable under 35 U.S.C. §103(a) over Reudink in view of Edler and in further view of U.S. Patent No. 5,285,498 (hereinafter "Johnston").

3. Whether claims 10-12 and 34-36 are unpatentable under 35 U.S.C. §103(a) over Reudink in view of Edler and in further view of U.S. Patent No. 5,832,379 (hereinafter "Mallinckrodt").

4. Whether claims 22-24 and 46 are unpatentable under §103(a) over Reudink in view of Edler and in further view of allegedly admitted prior art.

GROUPING OF CLAIMS

With regard to Issue 1, claims 1-3, 8, 9, 13, 14, 19-21, 25-27, 32, 33, 37, 38 and 43-45 stand or fall together.

With regard to Issue 2, claims 4, 15, 28 and 39 stand or fall together, claims 5, 16, 29 and 40 stand or fall together, claims 6, 17, 30 and 41 stand or fall together, and claims 7, 18, 31 and 42 stand or fall together.

With regard to Issue 3, claims 10 and 34 stand or fall together, and claims 11, 12, 35 and 36 stand or fall together.

With regard to Issue 4, claims 22, 23 and 46 stand or fall together, and claim 24 stands or falls alone.

ARGUMENT

Issue 1

A proper *prima facie* case of obviousness requires that the cited references when combined must "teach or suggest all the claim limitations," and that there be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references or to modify the reference teachings. See MPEP, Eighth Edition, August 2001, §706.02(j).

Applicants submit that the Examiner has failed to establish a proper *prima facie* case of obviousness in the present §103(a) rejection, in that the Reudink and Edler references, even if assumed to be combinable, fail to teach or suggest all the claim limitations, and in that no cogent motivation has been identified for combining the Reudink and Edler references or modifying the reference teachings to reach the claimed invention.

Each of independent claims 1, 8, 19, 25, 32 and 43 includes limitations relating to the communication of first and second representations of a signal that includes a first component and a second component. The first representation contains first information concerning at least the first component, and second information concerning at least one coefficient for predicting the second component based on the first information. The second representation contains third information concerning at least the second component, and fourth information concerning at least one coefficient for predicting the first component based on the third information.

It is important to note that the second information of the first representation is explicitly described in the claim as "concerning at least one coefficient for predicting the second component based on the first information." Similarly, the fourth information is explicitly described in the claim

as "concerning at least one coefficient for predicting the first component based on the third information." Thus, the claimed second and fourth information concern coefficients utilizable in prediction of the respective components of the signal for which the representations are generated. Also, the claims require that the representations be configured such that the second component is predictable from information in the first representation and the first component is predictable from information in the second representation.

As mentioned previously, in the context of an example of an illustrative embodiment of the invention falling within the above-noted limitations, the first and second representations are referred to as D1 and D2 representations, respectively. The D1 representation in this embodiment contains: (i) information concerning a left channel signal L of an analog stereo audio signal, and (ii) parametric information concerning a right channel signal R of the analog stereo audio signal. The D2 representation in this embodiment contains: (i) information concerning R, and (ii) parametric information concerning L. The parametric information of D1 and D2 is also referred to as respective "param-R" and "param-L" information. See the specification at, for example, page 5, line 24 to page 6, line 25. As further described at page 9, line 15, to page 10, line 6, of the specification, the D1 "param-R" parametric information may comprise first and second predictor coefficients α^i_0 and α^i_1 of a two-tap predictor for predicting R based on the L information in D1. Similarly, the D2 "param-L" parametric information may comprise first and second predictor coefficients β^i_0 and β^i_1 of a two-tap predictor for predicting L based on the R information in D2.

It should be noted that this example is presented herein in order to illustrate one possible embodiment of the invention that falls within the above-noted claim limitations. Applicants are not suggesting that any of the claims include as limitations the particular features of this illustrative embodiment.

Applicants respectfully submit that the Reudink and Edler references, even if assumed combinable, collectively fail to teach or suggest the above-noted limitations of the independent claims relating to first and second representations of a signal that includes a first component and a second component.

The Examiner in formulating the §103(a) rejection argues that the "two sets of bits" generated in the coding arrangement in FIGS. 1 and 2 of Reudink read on the "signal including at least a first component and a second component" as claimed. See the Office Action at page 2, last

paragraph. However, the two sets of bits relied on by the Examiner are outputs of the interpolative coder 12 of Reudink, and therefore cannot read on the claimed signal having at least first and second components. The Examiner at page 3, lines 2-6, goes on to argue that these same two sets of bits in Reudink also read on the claimed first and second representations. Apparently, the Examiner is attempting to simultaneously read the outputs of the interpolative coder 12 in FIGS. 1 and 2 of Reudink on the claimed first and second components of the signal, as well as the claimed first and second representations generated from that signal. The input signal applied to the interpolative coder 12 in Reudink is not described as having distinct first and second components. Instead, it is simply a sampled analog message signal, and the interpolative coder 12 is configured to convert each analog sample applied thereto into a number pair code. See Reudink at column 2, lines 51-63, and column 3, lines 1-9.

Thus, the Examiner fails to make clear which portions of Reudink are alleged to meet the claimed first and second components of the signal for which representations are generated. This lack of clarity alone renders the rejection improper, as it makes it difficult if not impossible to assess any subsequent arguments regarding the claimed first, second, third and fourth information, each of which bears a specific relation to one of the claimed first and second components.

Indeed, since Reudink fails to relate to a signal including distinct first and second components as claimed, it is believed to be an improper primary reference for a §103(a) rejection of the independent claims.

The Examiner acknowledges the fact that Reudink fails to meet the claim limitations. See the Office Action at page 4, lines 4-9. The Examiner relies on Edler as allegedly supplying the teachings which are absent from Reudink. More specifically, the Examiner argues that the inputs x(n) and y(n) in FIGS. 1 and 2 of Edler correspond to the respective first and second components for which representations are generated. These figures show that the outputs of the computer unit 1 in FIG. 1 of Edler are x(n), a delay value d, predictor coefficients a_k, and a prediction error e(n). The claims call for generation of first and second representations. The Examiner argues that x(n), allegedly the first component of the signal for which the two representations are generated, is the first information of the first representation. The Examiner further argues that the predictor coefficients a_k and the prediction error e(n) correspond to the claimed second and fourth information, respectively. Finally, the Examiner argues that x(n) and y(n), allegedly the respective first and

second components of the signal for which the two representations are generated, comprise the third information in view of the "dual and alternate half teachings" of Reudink.

Applicants respectfully disagree. Edler specifically states that the outputs of the computer unit 1 in FIG. 1 of Edler are x(n), a delay value d, predictor coefficients a_k, and a prediction error e(n). These values fail to meet the particular limitations of the claims, for at least the reason that the prediction error e(n) cannot be the claimed fourth information as it does not concern at least one coefficient for predicting the first component based on the third information. In fact, Edler specifically distinguishes the prediction error e(n) from prediction coefficients, the latter being denoted as a_k in Edler. Edler simply fails to disclose first and second representations configured such that the second component is predictable from information in the first representation and the first component is predictable from information in the second representation, as claimed.

Reudink fails to supplement this fundamental deficiency of Edler as applied to the claims. With regard to Reudink, the Examiner apparently argues that the first and second numbers of the number pair generated for a given sample of the analog message signal in interpolative coder 12 comprise the respective first and second representations. However, one of the numbers of the number pair generated for a given sample in Reudink is not predicted from the other, or vice versa. Thus, there is no teaching in Reudink that the second component is predictable from information in the first representation and the first component is predictable from information in the second representation, as claimed.

Accordingly, the collective teachings of Reudink and Edler fail to disclose or suggest each and every element of each of the independent claims.

Moreover, there is no motivation to combine Reudink and Edler or to modify their teachings to reach the limitations in question.

The Federal Circuit has stated that when patentability turns on the question of obviousness, the obviousness determination "must be based on objective evidence of record" and that "this precedent has been reinforced in myriad decisions, and cannot be dispensed with." In re Sang-Su Lee, 277 F.3d 1338, 1343 (Fed. Cir. 2002). Moreover, the Federal Circuit has stated that "conclusory statements" by an examiner fail to adequately address the factual question of motivation, which is material to patentability and cannot be resolved "on subjective belief and unknown authority." Id. at 1343-1344.

There has been no showing in the present §103(a) rejection of objective evidence of record that would motivate one skilled in the art to combine the Reudink and Edler references or to modify the proposed combination of references to produce the particular limitations in question.

With regard to motivation to combine Reudink and Edler, the Examiner argues at page 5, last paragraph, to page 6, first paragraph, of the Office Action that it would be obvious in part because "[e]ncoding two different transmission channels in the style of Reudink would have increased the reliability of receiving the signal beyond that of the single transmission path illustrated in the disclosure of Edler." Applicants submit that this is precisely the type of subjective, conclusory statement that the Federal Circuit has indicated provides insufficient support for an obviousness rejection.

Also, Applicants submit that the cited references actually teach away from the claimed invention. For example, the Examiner argues that x(n) and y(n) in Edler correspond to the claimed first and second components of the signal for which first and second representations are generated. The y(n) component is never directly transmitted in Edler, but is instead predicted from x(n) using the delay value d, predictor coefficients a_k, and prediction error e(n). However, there is no ability in Edler for predicting x(n) from any of the transmitted information. This is a direct teaching away from the claimed invention, in which the second representation specifically includes not only third information concerning the second component, but also fourth information concerning at least one coefficient for predicting the first component based on the third information. Similarly, one of the numbers of a given number pair at the output of the interpolative coder 12 of Reudink is not used to predict the other, or vice versa. Again, this is a direct teaching away from the claimed invention, in which the second component is predictable from information in the first representation and the first component is predictable from information in the second representation.

It therefore appears that the Examiner in combining Reudink and Edler has simply undertaken a hindsight-based piecemeal reconstruction of the claimed invention based on the disclosure provided by Applicants. Such an approach is improper.

Dependent claims 2, 3, 9, 13, 14, 20, 21, 26, 27, 33, 37, 38, 44 and 45 are believed allowable for at least the reasons identified above with regard to their respective independent claims.

Issue 2

Dependent claims 4-7, 15-18, 28-31 and 39-42 are believed allowable for at least the reasons identified above with regard to their respective independent claims 1, 8, 25 and 32. Also, certain of these claims are believed to define separately-patentable subject matter relative to the proposed combination of Reudink, Edler and Johnston, as will be described in greater detail below.

The arguments presented above with regard to independent claims 1, 8, 25 and 32 are realleged and incorporated herein by reference.

The Johnston reference fails to supplement the above-noted fundamental deficiencies of Reudink and Edler as applied to independent claims 1, 8, 25 and 32.

With regard to claims 4, 15, 28 and 39, these claims specify that the first information contained in the first representation concerns a combination of the first component and the second component of the given signal. The Examiner relies on sum/difference operations from Johnston, but Johnston fails to provide a specific connection between resulting sum/difference components and particular information elements of first and second representations of a signal comprising first and second components as claimed. In addition, only a conclusory statement of motivation to combine Johnston with Reudink and Edler is provided, and such a statement is believed to be insufficient to support the obviousness rejection of the claims in question.

With regard to claims 5, 16, 29 and 40, these claims specify that the combination of the first component and the second component in the first information is adaptively determined. An example of such an arrangement is described in the specification at, for example, page 13, line 32, to page 14, line 18, and utilizes adapter 211 shown in FIG. 2 of the drawings. The Examiner relies on sum/difference operations from Johnston, but Johnston fails to provide a specific connection between resulting sum/difference components and particular information elements of first and second representations of a signal comprising first and second components as claimed. In addition, only a conclusory statement of motivation to combine Johnston with Reudink and Edler is provided, and such a statement is believed to be insufficient to support the obviousness rejection of the claims in question.

With regard to claims 6, 17, 30 and 41, these claims specify that the third information contained in the second representation concerns a combination of the first component and the second component of the given signal. The Examiner relies on sum/difference operations from Johnston,

but Johnston fails to provide a specific connection between resulting sum/difference components and particular information elements of first and second representations of a signal comprising first and second components as claimed. In addition, only a conclusory statement of motivation to combine Johnston with Reudink and Edler is provided, and such a statement is believed to be insufficient to support the obviousness rejection of the claims in question.

With regard to claims 7, 18, 31 and 42, these claims specify that the combination of the first component and the second component in the third information is adaptively determined. An example of such an arrangement is described in the specification at, for example, page 13, line 32, to page 14, line 18, and utilizes adapter 211 shown in FIG. 2 of the drawings. The Examiner relies on sum/difference operations from Johnston, but Johnston fails to provide a specific connection between resulting sum/difference components and particular information elements of first and second representations of a signal comprising first and second components as claimed. In addition, only a conclusory statement of motivation to combine Johnston with Reudink and Edler is provided, and such a statement is believed to be insufficient to support an obviousness rejection of the claims in question.

Issue 3

Dependent claims 10-12 and 34-36 are believed allowable for at least the reasons identified above with regard to their respective independent claims 8 and 32. Also, certain of these claims are believed to define separately-patentable subject matter relative to the proposed combination of Reudink, Edler and Mallinckrodt, as will be described in greater detail below.

The arguments presented above with regard to independent claims 8 and 32 are realleged and incorporated herein by reference.

The Mallinckrodt reference fails to supplement the above-noted fundamental deficiencies of Reudink and Edler as applied to independent claims 8 and 32.

As indicated above, Applicants also believe that certain of claims 10-12 and 34-36 define separately-patentable subject matter relative to the proposed combination of Reudink, Edler and Mallinckrodt.

With regard to claims 10 and 34, these claims specify that the first representation and the second representation are encoded in accordance with a forward error correction coding technique.

It is again important to note that the first and second representations are representations of the same signal. The "two shown sources of audio input" referred to by the Examiner are different signals, and cannot be viewed as first and second representations of the same signal as claimed. Moreover, the Examiner relies on elements 114, 156 of FIG. 7 of Mallinckrodt, calling both such elements "forward error encoders." It is believed that this is an incorrect characterization of the reference, in that FIG. 7 clearly indicates that element 156 is a forward error decoder, rather than a forward error encoder. The proposed combination of Reudink, Edler and Mallinckrodt therefore fails to meet the limitation in question.

Issue 4

Dependent claims 22-24 and 46 are believed allowable for at least the reasons identified above with regard to their respective independent claims 19 and 43. At least dependent claim 24 is also believed to define separately-patentable subject matter, as will be described in greater detail below.

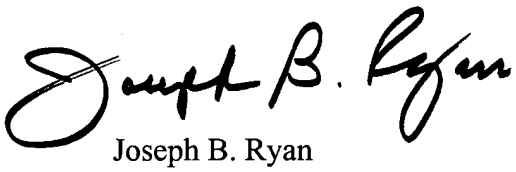
The arguments presented above with regard to independent claims 19 and 43 are realleged and incorporated herein by reference.

The allegedly admitted prior art fail to supplement the above-noted fundamental deficiencies of Reudink and Edler as applied to the independent claims.

With regard to dependent claim 24, this claim specifies that a third representation of the signal is transmitted through a selected one of the communication channels, where the selected channel includes a terrestrial link, and the communication channels also include satellite links. An example of such an arrangement is described in the specification at, for example, page 4, lines 4-23, and page 5, lines 24-28. The Examiner argues that the limitations of claim 24 are obvious in view of a combination of Reudink, Edler and allegedly admitted prior art. However, the proposed combination does not make any reference whatsoever to a third representation of a signal, nor the transmission of such a third representation over a terrestrial link in a set of channels that include satellite links that may be carrying first and second representations of the same signal. Thus, the combined teachings of Reudink, Edler and the allegedly admitted prior art fail to meet the particular limitations of dependent claim 24.

In view of the above, Applicants believe that claims 1-46 are in condition for allowance, and respectfully request withdrawal of the §103(a) rejections.

Respectfully submitted,



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Joseph B. Ryan
Attorney for Applicant(s)
Reg. No. 37,922
Ryan, Mason & Lewis, LP
90 Forest Avenue
Locust Valley, NY 11560
(516) 759-7517

APPENDIX

1. Apparatus for communicating a signal over a plurality of communication channels, the signal including at least a first component and a second component, the apparatus comprising:

a processor for generating at least a first representation and a second representation of the signal, the first representation containing first information concerning at least the first component, and second information concerning at least one coefficient for predicting the second component based on the first information, the second representation containing third information concerning at least the second component, and fourth information concerning at least one coefficient for predicting the first component based on the third information; and

an output device for transmitting the first representation and the second representation through the communication channels.

2. The apparatus of claim 1 wherein the signal includes a stereo audio signal.

3. The apparatus of claim 2 wherein the first component includes a left channel signal of the stereo audio signal, and the second component includes a right channel signal thereof.

4. The apparatus of claim 1 wherein the first information concerns a combination of the first component and the second component.

5. The apparatus of claim 4 wherein the combination of the first component and the second component is adaptively determined.

6. The apparatus of claim 1 wherein the third information concerns a combination of the first component and the second component.

7. The apparatus of claim 6 wherein the combination of the first component and the second component is adaptively determined.

8. Apparatus for recovering a signal including at least a first component and a second component, the apparatus comprising:

a receiver for receiving at least a first representation and a second representation of the signal, the first representation containing first information concerning at least the first component, and second information concerning at least one coefficient for predicting the second component based on the first information, the second representation containing third information concerning at least the second component, and fourth information concerning at least one coefficient for predicting the first component based on the third information; and

a processor for selecting use of at least one of the first representation and the second representation to recover the signal.

9. The apparatus of claim 8 wherein the at least one of the first representation and the second representation is selected based on a measure of corruption of the selected representation.

10. The apparatus of claim 9 wherein the first representation and the second representation are encoded in accordance with a forward error correction coding technique.

11. The apparatus of claim 10 wherein the measure is a function of a count of detections of errors in the selected representation, in accordance with the forward error correction coding technique.

12. The apparatus of claim 9 wherein the first representation and the second representation are received from a plurality of communication channels, respectively, the measure being a function of a signal-to-interference ratio afforded by the communication channel from which the selected representation is received.

13. The apparatus of claim 8 wherein the signal includes stereo audio signal.

14. The apparatus of claim 13 wherein the first component includes a left channel signal of the stereo audio signal, and the second component includes a right channel signal thereof.

15. The apparatus of claim 8 wherein the first information concerns a combination of the first component and the second component.

16. The apparatus of claim 15 wherein the combination of the first component and the second component is adaptively determined.

17. The apparatus of claim 8 wherein the third information concerns a combination of the first component and the second component.

18. The apparatus of claim 17 wherein the combination of the first component and the second component is adaptively determined.

19. A system for communicating a signal which includes at least a first component and a second component, the system comprising:

a plurality of communication channels;

a transmitter for transmitting at least a first representation and a second representation of the signal through the communication channels, the first representation containing first information concerning at least the first component, and second information concerning at least one coefficient for predicting the second component based on the first information, the second representation containing third information concerning at least the second component, and fourth information concerning at least one coefficient for predicting the first component based on the third information; and

a receiver for recovering the signal based on at least a selected one of the first representation and the second representation.

20. The system of claim 19 wherein the signal includes a stereo audio signal.

21. The system of claim 20 wherein the first component includes a left channel signal of the stereo audio signal, and the second component includes a right channel signal thereof.

22. The system of claim 19 wherein the communication channels are simultaneously available for transmitting the first representation and the second representation therethrough, respectively.

23. The system of claim 19 wherein the communication channels include satellite links.

24. The system of claim 23 wherein a third representation of the signal is transmitted through a selected one of the communication channels, the selected channel includes a terrestrial link.

25. A method for communicating a signal over a plurality of communication channels, the signal including at least a first component and a second component, the method comprising:

generating at least a first representation and a second representation of the signal, the first representation containing first information concerning at least the first component, and second information concerning at least one coefficient for predicting the second component based on the first information, the second representation containing third information concerning at least the second component, and fourth information concerning at least one coefficient for predicting the first component based on the third information; and

transmitting the first representation and the second representation through the communication channels.

26. The method of claim 25 wherein the signal includes a stereo audio signal.

27. The method of claim 26 wherein the first component includes a left channel signal of the stereo audio signal, and the second component includes a right channel signal thereof.

28. The method of claim 25 wherein the first information concerns a combination of the first component and the second component.

29. The method of claim 28 wherein the combination of the first component and the second component is adaptively determined.

30. The method of claim 25 wherein the third information concerns a combination of the first component and the second component.

31. The method of claim 30 wherein the combination of the first component and the second component is adaptively determined.

32. A method for recovering a signal including at least a first component and a second component, the method comprising:

receiving at least a first representation and a second representation of the signal, the first representation containing first information concerning at least the first component, and second information concerning at least one coefficient for predicting the second component based on the first information., the second representation containing third information concerning at least the

second component, and fourth information concerning at least one coefficient for predicting the first component based on the third information; and

selecting use of at least one of the first representation and the second representation to recover the signer.

33. The method of claim 32 wherein the at least one of the first representation and the second representation is selected based on a measure of corruption of the selected representation.

34. The method of claim 33 wherein the first representation and the second representation are encoded in accordance with a forward error correction coding technique.

35. The method of claim 34 wherein the measure is a function of a count of detections of errors in the selected representation, in accordance with the forward error correction coding technique.

36. The method of claim 33 wherein the first representation and the second representation are received from a plurality of communication channels, respectively, the measure being a function of a signal-to-interference ratio afforded by the communication channel from which the selected representation is received.

37. The method of claim 32 wherein the signal includes a stereo audio signal.

38. The method of claim 37 wherein the first component includes a left channel signal of the stereo audio signal, and the second component includes a right channel signal thereof.

39. The method of claim 32 wherein the first information concerns a combination of the first component and the second component.

40. The method of claim 39 wherein the combination of the first component and the second component is adaptively determined.

41. The method of claim 32 wherein the third information concerns a combination of the first component and the second component.

42. The method of claim 41 wherein the combination of the first component and the second component is adaptively determined.

43. A method for communicating a signal over a plurality of communications channels, the signal including at least a first component and a second component, the method comprising:

transmitting at least a first representation and a second representation of the signal through the communication channels, the first representation containing first information concerning at least the first component, and second information concerning at least a first coefficient for predicting the second component based on the first information, the second representation containing

third information concerning at least the second component, and fourth information concerning at least a second coefficient for predicting the first component based on the third information; and

recovering the signal based on at least a selected one of the first representation and the second representation.

44. The method of claim 43 wherein the signal includes a stereo audio signal.

45. The method of claim 44 wherein the first component includes a left channel signal of the stereo audio signal, and the second component includes a right channel signal thereof.

46. The method of claim 43 wherein the communication channels are simultaneously available for transmitting the first representation and the second representation therethrough, respectively.